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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/786,979	06/04/2001	Gerald f. Hermann	LUM-100-A-PC	8056

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EXAMINER

EDMONDSON, LYNNE RENEE

ART UNIT

PAPER NUMBER

1725

DATE MAILED: 09/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/786,979

Applicant(s)

HERMANN ET AL.

Examiner

Lynne Edmondson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or  
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

1. Claims 1-4, 6-9 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Mushabac (USPN 5347454).

Mushabac teaches a robotic laser device comprising a laser head (tip) mounted to the robot (col 5 lines 1-23 and col 17 lines 16-30), the head having a telescopable housing and means (computer and camera) for determining the operating mode and distance from the workpiece (tooth) (col 14 lines 15-61) wherein the computer program (col 14 lines 21-39) stops the process at a predetermined distance (col 8 lines 17-68). The distance is between zero (tooth surface) and several millimeters (col 9 lines 29-64). The operating modes include hold (interrupt) , run (drilling) and reaching the limit (col 8 lines 48-60). The device comprises moveable receiving optics including fibers and focal lenses for adjusting the path of the light (col 10 lines 40-68).

2. Claims 1, 6, 7, 18-22 and 25-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Thomas et al. (USPN 4855565).

Thomas teaches a robotic laser device comprising a laser head with a nozzle and tip mounted to the robot the head having a telescopable housing (figure 1, col 1 lines 1-38 and col 2 lines 15-28) and means (capacitive sensor) for determining the operating mode and distance from the workpiece (col 6 lines 18-23) wherein the programmable logic circuit of a computer program stops the process at a predetermined distance limit (col 14 lines 39-58 and col 13 line 62 – col 14 line 16). The distance is close to but not touching (engaging) the workpiece surface (col 12 line 50 – col 13 line 3). The device comprises moveable receiving optics including focal lenses for adjusting the path of the light. The optic (mirror) can be translated and rotated (pivoted) within the housing (col 13 lines 4-43). The device also has a telescopable (rotatable) gas delivery tube within the housing (col 14 lines 7-38). As shown in figure 4A, the nozzle has three tapered sections with an elongated section.

3. Claims 1, 6, 7, 18, 19, 23 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Britnell (USPN 5961858).

Britnell teaches a robotic laser device comprising a laser head (33) with a nozzle and tip mounted to the robot the head and means for determining the operating mode and distance from the workpiece comprising a sensor (col 6 lines 4-66) and interlock (col 4 line 66 – col 5 line 36) wherein the programmable logic circuit of a computer program stops the process at a predetermined distance limit (col 8 lines 13-27 and col 9

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lines 20-48). The distance is close to but not touching the workpiece surface. The device comprises moveable receiving optics (optic head 51) including a lens and fibers in an adapter (bracket 85) which is rotatable (pivotal) and translatable within the housing (35) (figures 1-3, col 4 lines 16-67 and col 7 line 48 - col 8 line 13). See also Britnell claims 1-4 and 19-21.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 11-13 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mushabac (USPN 5347454).

Mushabac teaches a robotic laser device comprising a laser head (tip) mounted to the robot (col 5 lines 1-23 and col 17 lines 16-30), the head having a telescopable housing and means (computer and camera) for determining the operating mode and distance from the workpiece (tooth) (col 14 lines 15-61) wherein the computer program circuit (col 14 lines 21-39) stops the process at a predetermined distance (col 8 lines 17-68). The distance is between zero (tooth surface) and several millimeters (col 9 lines 29-64). The operating modes include hold (interrupt), run (drilling) and reaching the limit (col 8 lines 48-60). The device comprises moveable receiving optics including

fibers and focal lenses for adjusting the path of the light (col 10 lines 40-68). However, there is no disclosure of a crash interlock.

It would have been obvious to one of ordinary skill in the art at the time of the invention that the program interruption which stops the process at predetermined distance is equivalent to a crash interlock and serves the same purpose (col 8 lines 38-60).

5. Claims 5, 10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mushabac (USPN 5347454) in view of Thomas et al. (USPN 4855565).

Mushabac teaches a robotic laser device comprising a laser head (tip) mounted to the robot (col 5 lines 1-23 and col 17 lines 16-30), the head having a telescopable housing and means (computer and camera) for determining the operating mode and distance from the workpiece (tooth) (col 14 lines 15-61) wherein the computer program (col 14 lines 21-39) stops the process at a predetermined distance (col 8 lines 17-68). The distance is between zero (tooth surface) and several millimeters (col 9 lines 29-64). The operating modes include hold (interrupt) , run (drilling) and reaching the limit (col 8 lines 48-60). The device comprises moveable receiving optics including fibers and focal lenses for adjusting the path of the light (col 10 lines 40-68). However, there is no disclosure of a capacitive sensor.

Thomas teaches a robotic laser device comprising a laser head with a nozzle and tip mounted to the robot the head having a capacitive sensor for determining the

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operating mode and distance from the workpiece (col 6 lines 18-23) and telescopic housing (figure 1, col 1 lines 1-38 and col 2 lines 15-28).

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ a capacitive sensor as are known in the art which would be equivalent to the CCD and transducer sensors (Mushabac, col 9 lines 10-35 and lines 53-67).

6. Claims 11 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Britnell (USPN 5961858).

Britnell teaches a robotic laser device comprising a laser head (33) with a nozzle and tip mounted to the robot the head and means for determining the operating mode and distance from the workpiece comprising a sensor (col 6 lines 4-66) and interlock (col 4 line 66 – col 5 line 36) wherein the programmable logic circuit of a computer program stops the process at a predetermined distance limit (col 8 lines 13-27 and col 9 lines 20-48). The distance is close to but not touching the workpiece surface. The device comprises moveable receiving optics (optic head 51) including a lens and fibers in an adapter (bracket 85) which is rotatable (pivotal) and translatable within the housing (35) (figures 1-3, col 4 lines 16-67 and col 7 line 48 - col 8 line 13). However, there is no disclosure of a crash interlock.

It would have been obvious to one of ordinary skill in the art at the time of the invention that the program interruption which stops the process at predetermined

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distance and dovetail interlocks for securing position are equivalent to a crash interlock and serve the same purpose (col 5 lines 2-30 and col 9 lines 20-48).

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Cole, III et al. (USPN 6392192 B1), Ota et al. (USPN 5592294, laser, distance 0-2 mm), Coulter (USPN 4578554, laser, robot, moving fibers), Mazumder et al. (USPN 5446549, fiber translation), Furrer et al. (USPN 4324972, translatable optic), Gilli et al. (USPN 4618758), Nagahori et al. (USPN 6316743, tapered nozzle and gas tube), Haruta et al. (USPN 5293023), Best (USPN 5515599), Kilian et al. (USPN 5304773), Nakamura et al. (JPN 10-128571 A, tapered nozzle) and IBM TBD NN900731 "Interlocking Anti-Crash and Conveyor Indexing Control Card for High-Speed Substrate Testers" (crash interlock, robot).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynne Edmondson whose telephone number is (703) 306-5699. The examiner can normally be reached on M-F from 7-4 with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (703) 308-3318. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7118 for regular communications and (703) 305-7115 for After Final communications.



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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

Lynne Edmondson  
Examiner  
Art Unit 1725

 9/18/02

LRE  
September 18, 2002